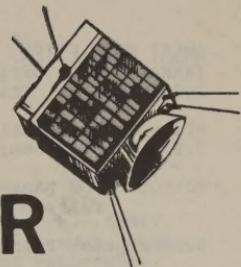




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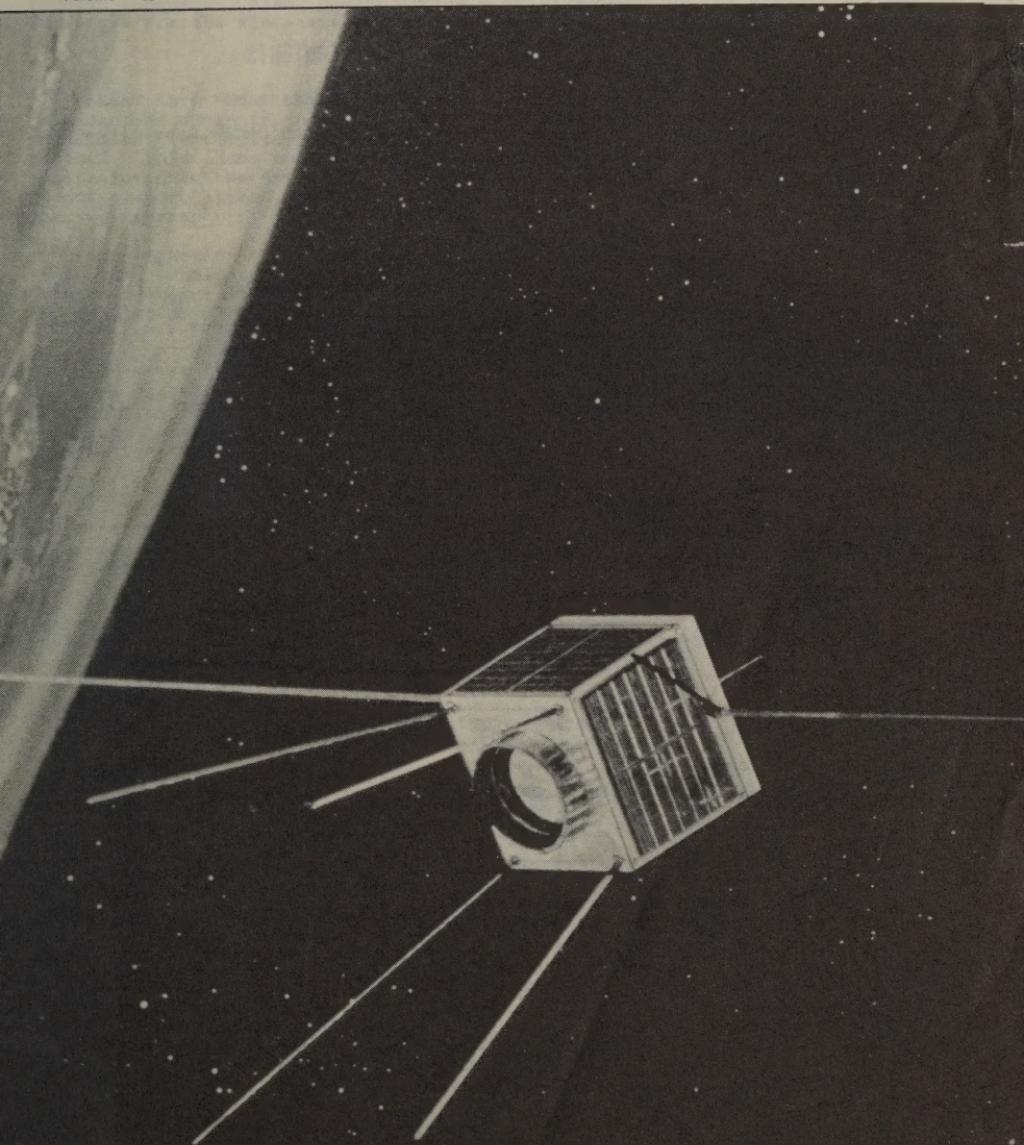
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COVER PICTURE

WA6TUF's artist's
impression of the AMSAT-
OSCAR 8 spacecraft in
Earth orbit.

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BACK ISSUES AVAILABLE

Back issues of the Newsletter are available upon request in return for a donation to AMSAT.

If you specify what year you first joined AMSAT, we'll send you an assortment of ten earlier issues for \$10.00, or fifteen issues for \$15.00.

Certain pre-1974 and the September 1975 issues are not available.

Note that due to the time and effort involved in servicing back issue requests, the minimum donation should be \$10.00.

Write to Back Issues, AMSAT,
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EDITORIAL

By Joe Kasser, G3ZCZ

PARDON MY FRENCH

This issue of the Newsletter contains an article written in French. AMSAT is an organization growing both domestically and internationally. As such, much of our membership is overseas. Reflecting this changing pattern of membership, it is the intention of this Editor to include from time to time, articles written in languages other than English, preferably French, German or Spanish. To prospective authors in those languages please supply a typed manuscript because it is difficult enough to work on a handwritten manuscript in English, let alone a foreign language. Also, please supply a brief summary of the article written in English. Use the F10K article in this issue as your guide.

VOTE!

AMSAT is a membership organization. Recently, several members have expressed opinions and comments that clearly reflect dissatisfaction with the organization, particularly satellite operating policies. It is clearly up to the directors to respond. This issue contains the ballots for the annual election. It is up to you to vote for the directors of your choice. Your vote does count, so if you do not plan to attend the meeting, be sure to put your vote in the mail. Make your voice count.

If you would like to run for the Board of Directors next year, the bylaws state that candidates must be nominated by a member society. If you feel strongly about our organization and its policies, let us hear from you, on the nets, in the Newsletter and the election campaign.

CALCULATOR PROGRAMS

The last few issues of the Newsletter have carried articles about calculator programs for computing OSCAR orbit data. In the future, we plan to announce their availability, rather than publish them in full.

AREA COORDINATOR UPDATE

Please make the following changes to the list published in the March issue.

USA - Utah - delete W7ZC (see page 15).

ITALY - note change of address for AMSAT-I as follows.

AMSAT-ITALIA -- c/o Domenico Marini I8CVS. V.A. De Gasperi 97
80059 Torre del Greco (Napoli) tel (081) 881-8144.

OSCAR INFORMATION (Northern Hemisphere)

Compiled by Chuck Dorian, W3JPT

MODE	UPLINK			DOWNLINK			BEACON		DOWNLINK OFFSET-kHz
	Freq.	Polar.	Mod.	Freq.	Polar.	Mod.	Freq.	Polar.	
7A	145.85 -145.95	LHC	USB	29.4-29.5	L	USB	29.502	L	-
B	432.125-432.175	RHC	USB	145.975-145.925	RHC	LSB	145.972	RHC	-
8A	145.85-145.95	LHC	USB	29.4-29.5	L	USB	29.402	L	-8
J	145.9-146.0	RHC	USB	435.1-435.2	L	LSB	435.095	L	-6

RANGE MEASUREMENTS WITH OSCAR SATELLITES

By Michel Alas, F1OK
41 Avenue Joffre
Gayny 93220, France

Abstract translation

This paper describes a very simple pulse generator with which it is possible to measure the distance between one's station and the AMSAT-OSCAR 7 or 8 satellites.

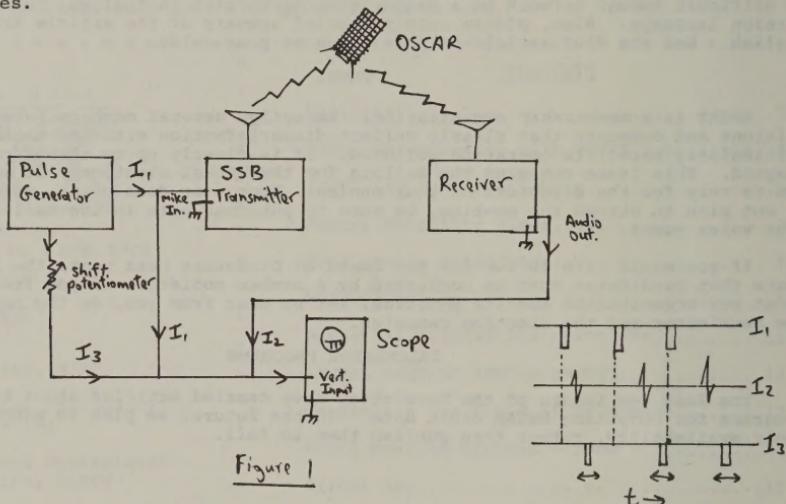


Figure 1

A pulse generator at a fixed frequency (period = 30 milliseconds) modulates the SSB transmitter. These pulses I_1 are received by the satellite transponder and come back in the receiver with a slight delay proportional to the distance (I_2). In order to make the measurement of this delay easier, we display in the vertical input of a scope:

- The pulses I_1 which modulate the transmitter
- The pulses I_2 coming from the receiver
- the pulses I_3 generated in the pulse generator with a known delay from the pulse I_1 according to the value of the shift potentiometer.

The determination of the distance is made by tuning the shift potentiometer in order to have I_2 and I_3 on the same vertical line of the scope. The reading of the value of the shift potentiometer gives the distance directly when the potentiometer has been calibrated.

Principle (voir Figure 1)

Un générateur d'impulsions (fréquence fixe période = 30 ms) module l'émetteur BLU. Les impulsions captées par le satellite parviennent au récepteur avec un certain retard fonction de l'éloignement. Pour mesurer commodelement ce retard on applique à l'entrée de l'oscilloscope:

les impulsions I_1 ayant modulées l'émetteur
les impulsions I_2 captées par le récepteur
des impulsions I_3 présentant un retard ajustable par rapport aux impulsions I_1 .

La mesure de la distance consiste à faire coïncider sur l'écran les impulsions I_2 avec les impulsions I_3 à l'aide du potentiomètre décaleur. On lit alors directement sur ce dernier préalablement étalonné la distance à laquelle se trouve OSCAR.

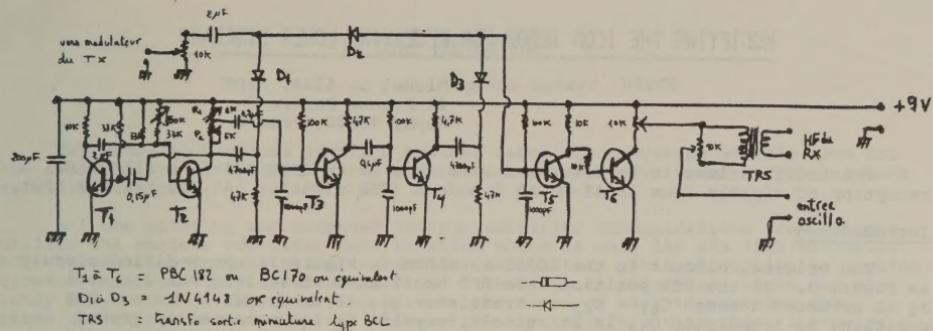


figure 2

Schema (voir Figure 2)

Les transistors T_1 et T_2 constituent un multivibrateur astable à partir duquel on obtient les impulsions I_1 par différentiation à l'aide du réseau résistance-capacité (47 k/4700 pF). L'impulsion négative obtenue est à la fois appliquée au modulateur de l'émetteur BLU et mise en forme par les transistors T_5 et T_6 afin de pouvoir être appliquée à l'oscilloscope.

Les impulsions I_3 sont également obtenues à partir de T_1 T_2 à l'aide de T_3 T_4 suivant un type de montage bien connu des télécommandistes. Le décalage des impulsions I_3 par rapport à I_2 est réglable à l'aide du potentiomètre P . Les impulsions I sont mises en forme par T_5 et T_6 pour être appliquées à l'entrée de l'oscilloscope.

Les impulsions I_2 captees par le recepteur, sont appliquees a l'oscilloscope par l'intermediaire du transformateur TRS.

Réalisation (voir Figure 3)

Elle est faite sur un circuit imprimé et ne présente aucune difficulté particulière. Le type de transistor n'est pas critique (PBC182 ou BC170 ou équivalents). La consommation étant faible (environ 5 mA sous 9V.) l'alimentation est autonome (2 piles de 4.5 V. en série).

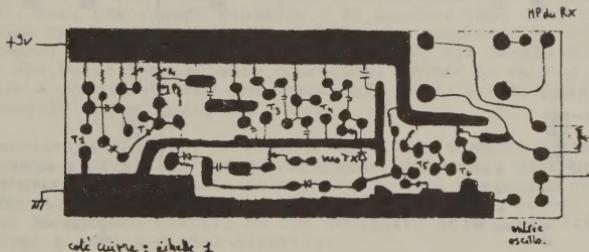


figure 3

Etalonnage

On procédera à l'ajustage de la fréquence du multivibrateur (ajustage de la fréquence à 33.3 Hz soit une période de 30 ms) en prenant la fréquence du secteur 50 Hz comme référence. La valeur de cette fréquence (33.3 Hz) conditionne la gamme où la mesure de la distance à laquelle se trouve le satellite est possible sans ambiguïté. Avec $F = 33.3$ Hz la mesure peut être faite entre 0 km et $300,000 \times \frac{1}{2} \times 30 \times 10^{-3} = 4500$ km ce qui est amplement suffisant pour les satellites AMSAT-OSCAR 7 et 8.

(Continued on Pg. 9)

MODIFYING THE ICOM IC202 FOR RECEIVING LOWER SIDEBAND

By Michel L. Alas, F1OK
41 Avenue Joffre
Gayny 93220, France

The modifications to be described were made to an ICOM IC202 to allow the reception of signals from AMSAT-OSCAR 7 mode B (SSB signals, 145.900-146.000 LSB).

Introduction

The original circuit in the IC202 is shown in Figure 1, the modified circuit is Figure 2. In the USB position, the BFO oscillates at 10.6985 MHz (crystal X_1 is grounded through $C_{61} + C_{63}$ as transistor Q_{17} is saturated). In the LSB position, as transistor Q_{12} is at cut-off, crystal X_1 is connected to ground through $C_{61} + C_{63}$ and the 3-30 pf trimmer. This trimmer has to be adjusted in order to make the BFO oscillate at a frequency of 10.7015 MHz. It can be set up using a frequency meter or by listening to the signals coming from AMSAT-OSCAR 7. The switching between LSB and USB is done by the function switch. The light in the S meter can also be removed if desired as shown in Figure 2.

Construction

The modifications can be made without removing the printed circuit board. Locate the BFO, remove its top cover by cutting the two-pin base. Next, cut the base lead of Q_{17} and the leads to C_{62} as shown in Figure 1. Solder the new components in place. (see Figure 2) Alignment should cause no problems. The only thing to do is to adjust the 3-30 pf trimmer in the LSB position to the correct value by receiving an LSB signal and adjusting it for best readability. After modification, the set will operate as before except that in the CW position there will be no more shift between the receive and transmit frequencies.

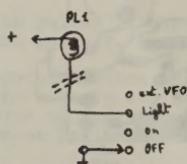
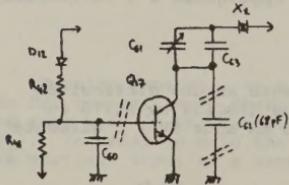


figure 1: original circuit.

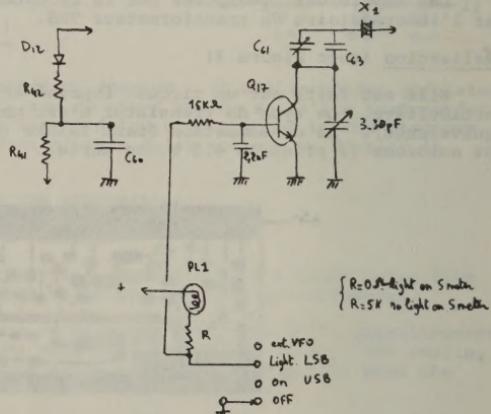


figure 2: modified circuit.

Components list : 1 trimmer 3.30 pF

1 resistor	15 K Ω	1/4W
1 resistor	5 K Ω	1/4W
1 condenser	2.2 pF	
1 capacitor	.0022 mF	

IS THIS THE FUTURE?

By Joe Kasser, G3ZCZ

Two pressing problems limiting amateur satellite operation at this time are the availability of spectrum space and the use of excessive power on the existing satellite uplinks.

All the existing and proposed amateur satellite communications transponders utilize the amateur two-meter band, in which there is only 150 kHz (145.85-146.00 MHz) agreed upon in band plans for amateur satellites. This allocation is getting crowded, and with only AMSAT-OSCAR 7 and 8 in orbit at this time, there are already many cases of QRM occurring between the users of each transponder when those uplinking to one satellite unintentionally interfere with those listening to the downlink of the other. When the Soviet RS OSCAR spacecraft and the AMSAT Phase III spacecraft fly, these problems will be even worse.

In 1979, there will be a World Administrative Radio Conference at which the spectrum will be assigned to the various worldwide user services including radio amateurs. It is thus important that the amateur satellite service demonstrate its intent to utilize all the frequencies allocated it or they may be lost. Currently, a 2304 MHz beacon is orbiting the earth aboard the AMSAT-OSCAR 7 spacecraft, but permission to activate it has not yet been obtained from the various licensing authorities because 2304 MHz is not yet a frequency allocated to the amateur satellite service.

At the IARU Region I meeting in Hungary earlier this year, an attempt by AMSAT to request extra frequency assignments in the 144-146 MHz worldwide two meter band for space communications was not successful because the whole band is heavily populated in Region I, something that I can confirm from personal experience.

There is thus no additional space at two meters for future spacecraft transponder links except possibly for geostationary amateur satellites stationed over Region 2. Since the design lead-time for spacecraft is long (even for amateur ones) and must be thought of as on the order of 2 to 4 years, the 70 cm band will probably be as crowded when post-Phase III satellites are flown as two meters is today. It is thus necessary to look for new frequencies for spacecraft to be built after the two Phase III prototypes.

The second major problem facing the amateur satellite service is the use of excessive uplink power by a minority of the satellite users. It is this minority of users who spoil the satellite operation for others.

It is too late to make any changes to the transponders on the first Phase III spacecraft and still meet the launch schedule. It is this long lead-time that inhibits implementing on Phase III many of the changes suggested by AMSAT members based on their personal experience gained from operating via AMSAT-OSCAR 6, 7 and 8. Spacecraft are built for reliable operation. There is no way to return a circuit or replace a component once the spacecraft is in orbit, thus all designs must be thoroughly tested prior to launch.

Consider the mechanics involved in amateur satellite communications. A user ground station accesses a satellite and communicates with other user ground stations all within range of the satellite at any time. Such operation requires some skill and is slightly more complex than conventional HF communications. Thus, each user interfaces his ground station to the satellite at the satellite - i.e., the satellite receives a user's signal directly.

Suppose the interface between the user and the satellite were moved from up in space to down on the ground in the following manner. Users would transmit their signals on the ground to a "gateway" earth station transponder or repeater that would uplink to the satellite. These gateway earth stations would be set up, one in each major city by a local AMSAT group and would be maintained by them. In this way AMSAT could provide the communications capability whereby one radio amateur relaxing by his or her swimming pool in Los Angeles could communicate with a friend riding the bus to work in London, each using walkie-talkie equipment, their signals being relayed through their local gateway earth stations to a satellite. The space segment uplink and downlink would be in the microwave bands assigned to the amateur space service, whilst the ground segment between the gate-

(Continued on Pg. 15)

A SIMPLE MIND TACKLES "OSCAR FOR SIMPLE MINDED BASICS"

By D.K. (Ken) Hargrove, W4OQP
1525 Cardinal Road
Orlando, FL 32803

A couple of weeks after acquiring my Radio Shack TRS-80 LEVEL I computer, I was looking around for suitable programs and came across "OSCAR For Simple Minded BASICS" by Dave Jones, WA2AML, in the AMSAT Newsletter (December 1977). After making suitable adjustments for my location, the program worked fine on my machine.

Success went to my head; I became ambitious and decided to add some frills. Thanks to the spadework done by Dave, I rode on his coat tails to further successes.

I set, and accomplished, the following goals: choice of OSCAR 7 or 8; display in UTC or local time; display of only those orbits within range; approximate AOS time for morning passes (AOS and EQX are not significantly different at my location on evening passes).

The program, as written, is valid only for my location. Using a Satellab or OSCAR Locator for reference, the following program lines should be modified for a different location: 370 thru 410, and 440 thru 480. Lines 105, 30010, and 30040 may be modified according to your local time zone.

Lines 550 and 590 establish the time interval between successive displays and can be varied to suit your needs.

The AOS is within \pm 3 minutes for my location. It could be further refined, and also added to the UTC display.

The program uses about 1.3K of memory. I am sure it will run on other BASIC machines, but it might require inserting "LET" and "THEN" in the appropriate places. Their use is usually optional in LEVEL I BASIC.

Since upgrading to a LEVEL II TRS-80 I have converted this program to LEVEL II. There were a couple of minor changes necessary; an SASE will get you the information.

I am sure the program can be made more elegant, but at this point I have temporarily run out of ambition. Good Luck, and thank you Dave.

```
5 CLS
10 PRINT" *** OSCAR 7 AND OSCAR 8 ***"
20 PRINT" ORBITAL CALCULATIONS"
30 INPUT"WHICH SATELLITE WILL BE USING ";S
40 PRINT" OSCAR";S;"DATA"
50 INPUT"REFERENCE ORBIT NR. ";R
60 INPUT"REFERENCE ORBIT DATE (DAY & MONTH)";D,R$
70 INPUT"REFERENCE ORBIT TIME (HRS, MIN, SEC)";H,B,C
80 INPUT"REFERENCE ORBIT EQX (LONG, DEG. & TENTHS)";L,G
90 INPUT"FINAL ORBIT NR. TO BE DISPLAYED";J
95 V=1: N=0
100 INPUT"Do you want display in UTC";T
105 IF T=0 PRINT"TIME WILL BE DISPLAYED IN EDT 24 HR CLOCK"
107 FORV=1 TO 1500:NEXTV:CLS
110 K=J+1-R
120 O=R
130 IF S=7 C=C+56.7
140 IF S=8 C=C+13.9
150 IF S=7 B=B+114
160 IF S=8 B=B+103
170 IF C>59 B=B+1
180 IF C>59 C=C-60
190 IF C>59 THEN170
200 IF B>59 H=H+1
210 IF B>59 B=B-60
220 IF B>59 THEN200
230 IF H>23 D=D+1
240 IF H>23 H=H-24
250 IF S=7 L=L+28
260 IF S=8 L=L+25
270 IF S=7 G=G+73747
```

OSCAR DX-PEDITION TO NAVASSA ISLAND

Dates: November 25 to December 2, 1978

AMSAT-OSCAR 7 Mode B 145.930 MHz CW
145.945 MHz SSB

Call Sign: WØZH/KP1

QSL via NØTG (ex WØTGB) Randy Rowe, 3237 Connecticut Drive, St. Charles, MO 63301

Operators WØRJU, WØZH, WBØRSL, NØWL, NØTG, K2KA, W2PAU, W6OIG

```

280 IF S=8 G=G+80861
290 IF G>99999 L=L+1
300 IF G>99999 G=G-100000
310 IF G>999999 G=G-1000000
320 IF L>360 L=L-360
330 IF L>360 THEN320
340 K=K-1
345 O=O+1
350 IF K=0 THEN999
360 IF S=8 THEN440
370 IF L<28 THEN130
380 IF L<113 THEN490
390 IF L<217 THEN130
400 IF L>300 THEN490
410 IF L>300 THEN130
430 GOTO 490
440 IF L<48 THEN130
450 IF L<=105 THEN490
460 IF L>230 THEN130
470 IF L<=280 THEN490
480 IF L>280 THEN130
490 IF T=0 GOSUB30010
500 PRINT"OSCAR";S;"OBIT NR. ";O
510 PRINT"DATE", "TIME", " ", "LONG. EQX"
520 IF T=1 THEN 570
530 PRINTW:A$,F;"HRS";B;"MIN";INT(C); "SEC",L; ". ";INT(G/10000); "DGS"
533 X=B;Y=
535 IF L<217 THEN540
536 IF L<300 X=X+40: IF X>60 Y=Y+1: IF X>60 X=X-60
538 PRINT" ", "ROS";Y; ", "X
540 PRINT:PRINT:PRINT

```

(Continued from Pg. 5)

On effectue ensuite l'étalementage du décaleur d'impulsion. Cette opération est faite à l'aide de l'oscilloscope par mesure sur l'écran de la position de I_3 par rapport à I_1 , en fonction de la valeur du potentiomètre P_1 . Ce dernier est doté d'un démultiplicateur (rapport 1/3) pour faciliter la lecture.

Décalage I_3/I_1 en ms	30	26.6	23.3	20.0	16.6	13.3
Distance OSCAR /station (en km)	4500	4000	3500	3000	2500	2000
Valeur approxi. de P_1 (k μ A) $R_1 = 0.26$ k μ A	1.45	1.70	2.20	2.70	3.30	4.10

(Tableau 1)

Utilisation

On raccorde le générateur à l'émetteur au récepteur et à l'oscilloscope.

On mesure le retard introduit par la chaîne émission/réception en opérant en boucle fermée c'est à dire en modulant l'émetteur et en captant les signaux par le récepteur. On observe un décalage entre I_1 et I_2 qui est de l'ordre de 1 ms. Ce décalage sera retranché des décalages observés lors des mesures faites avec le satellite.

Lors du passage du satellite on détermine le retard de l'impulsion I_2 par rapport à I_1 en manœuvrant le potentiomètre P_1 de façon à superposer I_3 et I_2 . On lit directement sur le potentiomètre P_1 la distance à laquelle se trouve le satellite (voir Tableau 1). Pour une orbite donnée, si l'on détermine les distances D_1 et D_2 à 2 instants T_1 et T_2 ainsi que les directions correspondantes (direction de l'antenne d'émission) il est possible de retrouver les caractéristiques de l'orbite (longitude et heure de passage à l'équateur). Pour les détails des calculs on se reportera à l'ouvrage: Specialized Communications Techniques p. 177 à 179 de l'ARRL.

L'auteur reste à la disposition des amateurs pour tous renseignements complémentaires.

PERPETUAL ACQUISITION COINCIDENCE PRINTOUTS FOR AMSAT-OSCAR 7 AND 8

By Bill Johnston, N5KR
1808 Pomona Drive
Las Cruces, New Mexico 88001

One of the most troublesome problems encountered in using the AMSAT-OSCAR satellites is in determining exactly when, and on what passes, two different stations can simultaneously access a particular satellite, and therefore establish communications with each other. There are several graphical and computer aids that can tell you where the satellite is with respect to your own station, but if there is some specific location you want to contact you will have to draw accessibility circles as well as the satellite track on a map and figure out when the satellite will pass through the area of overlap. The result can be a real eye-opener, and will quickly reveal why some stations, though no more distant than others, are much more difficult to contact.

Over a period of time, quite a few people asked me if I could come up with a computer solution for the problem, and a few years ago I wrote a computer program which uses an electronic plotter to draw a set of custom maps with built-in accessibility plots (elevation circles and azimuth radials). The end product was a very handy device, consisting of two maps and twenty overlays, and it yielded a lot of useful information. Unfortunately, since the finished maps were printed on photographic paper and the overlays were prepared on large sheets of photographic film, it was comparatively expensive. Worst of all, I had to do all of the photographic processing by hand in the bathroom. Consequently, I prepared these for only a few people before abandoning the system in favor of one based entirely on computer printouts.

The system I decided upon is based on the perpetual orbital printouts that have been in use for several years (see "AMSA Newsletter", September 1975 and March 1978), and for lack of a better name I've called it a "perpetual acquisition coincidence chart." Given any two locations and a specific satellite, the computer program will generate a printout of all times and passes when the two locations can simultaneously access that satellite. No other times or passes are included.

Figure 1 shows a small extract from a perpetual acquisition coincidence printout based on using OSCAR 8 between Washington and Atlanta. Its method of use is extremely simple and is identical to that of the regular perpetual orbital printout. Since this is described in the two articles cited previously, it won't be repeated here. The printout gives the time, azimuth, elevation, and range data from both locations.

Obviously, a different printout is necessary for every different pair of locations and every different satellite. Nevertheless, for those who regularly work through OSCAR to stations in a particular area, or for those who are trying to contact a difficult location for an award, the printout is an excellent solution.

Although the cost of the computer time remains relatively constant, the physical size of the printout varies enormously, depending upon the relative locations of the two stations. Consequently the cost of postage to mail them will vary enormously also. As a practical matter, I have had to simply guess at the average total cost, and have set the price the same as that for the regular orbital printouts.

If you would like an acquisition coincidence printout, you will need to send the following:

1. Name and mailing address.
2. The satellite for which the printout is to be made.
3. The two locations. The first one you list will be in the left column, the second one in the right column. For any location under 10,000 population, please give latitude and longitude, or describe carefully with respect to other nearby towns.

4. Cost as follows:

\$3.50 via fourth class mail, worldwide

\$4.00 via first class mail, USA, Canada, Mexico

\$5.00 via airmail, worldwide

Send the above to:

Bill Johnston, N5KR
1808 Pomona Dr.
Las Cruces, New Mexico 88001

ACQUISITION COINCIDENCE FOR 0-8

BETWEEN

WASHINGTON,
D.C.

GEORGIA,
ATLANTA

38 54N 77 1W

33 45N 84 24W

EQ CROSSING AT 46 DEG
TIME AZ EL RNG
MINS DG DG KM
7 117 3 3186
8 111 7 2880
9 105 10 2602
10 96 13 2362
11 86 16 2176
12 74 18 2058
13 61 19 2021
14 47 18 2069
15 36 16 2198
16 26 13 2392
17 18 10 2638
18 12 6 2922

EQ CROSSING AT 46 DEG
TIME AZ EL RNG
MINS DG DG KM
7 100 -1 3638
8 94 1 3402
9 87 3 3200
10 80 5 3038
11 71 6 2925
12 62 7 2866
13 53 7 2865
14 45 6 2923
15 36 5 3035
16 29 3 3197
17 22 1 3400
18 16 -1 3637

EQ CROSSING AT 47 DEG
TIME AZ EL RNG
MINS DG DG KM
7 118 4 3109
8 113 8 2800
9 106 11 2520
10 97 15 2279
11 87 18 2093
12 74 20 1979
13 60 21 1950
14 46 19 2009
15 34 17 2150
16 24 13 2356
17 17 10 2613
18 10 6 2906

EQ CROSSING AT 47 DEG
TIME AZ EL RNG
MINS DG DG KM
7 101 0 3547
8 94 2 3310
9 88 4 3108
10 80 6 2948
11 71 7 2838
12 62 8 2784
13 53 8 2791
14 44 7 2859
15 35 5 2981
16 28 4 3153
17 21 2 3366
18 15 -1 3611

EQ CROSSING AT 48 DEG
TIME AZ EL RNG
MINS DG DG KM
7 120 5 3034
8 114 9 2722
9 107 12 2438
10 98 16 2196
11 87 19 2011
12 73 22 1901

EQ CROSSING AT 48 DEG
TIME AZ EL RNG
MINS DG DG KM
7 101 1 3456
8 95 3 3218
9 88 5 3015
10 80 7 2857
11 71 8 2751
12 62 9 2703

Fig. 1 -- A small extract from a Perpetual Acquisition Coincidence Printout.

ANNOUNCEMENT OF AMSAT ANNUAL MEETING

The tenth AMSAT Annual Meeting will be held at 8:00 P.M. on Saturday, October 14, 1978 at the NASA Goddard Space Flight Center Employee Recreation Center in Greenbelt, Maryland.

In accordance with the AMSAT Bylaws, ballots for the election of three Directors and two alternate Directors will be counted at this meeting. The terms of the following Directors will be expiring as of this meeting: Tom Clark, W3IWI; Pat Gowen, G3IOR; and Richard Zwirko, K1HTV.

The agenda, in addition to the election and regular business, will include:

AMSAT Annual Report

AMSAT-Canada SYNCART Project Progress Report

AMSAT Phase III Progress Report

AMSAT-OSCAR 7 and 8 Operations

Results of election of Directors

This year, we will be dedicating our new AMSAT-OSCAR Spacecraft Laboratory located at the Goddard Space Flight Center Visitor Center at 3:00 P.M. This will be an opportunity to see satellite hardware and ground support equipment, followed by a tour of the NASA Goddard Space Flight Center.

For those coming from out of town, let us know, and we will try to arrange for you to be hosted by Washington area AMSAT members.

DIRECTIONS TO THE NASA GODDARD EMPLOYEE RECREATION CENTER:

Take the Baltimore-Washington Parkway to the Greenbelt Road exit (Rt. 193), and take Greenbelt Road east 1.5 miles to Soil Conservation Road (on the left). Turn left onto Soil Conservation Road and go 0.1 mile to the first open gate you come to on the right. Go through this gate, continue onto the gravel road and then on to the wooden Goddard Recreation Center building.

There will be an AMSAT dinner before the meeting at 6:00 P.M. at the Goddard Employee Recreation Center. Please let us know if you can join us so that we can firm up reservations.

The 146.25/85 AMSAT repeater will be available for talk-in before the dinner and the meeting.

CANDIDATES TO BOARD OF DIRECTORS

The following are brief biographical sketches of the candidates.

Thomas A. Clark, W3IWI Clarksville, Maryland

Nominated by Central States VHF Society, AMSAT Life Member LM-84, first licensed 1952. An experimenter, active in VHF/UHF from Colorado in 1959. Was President of U. of Colo. ARC and Boulder ARC; holds BPL, WAS, WAC. Was Colorado PAM and Asst. Sec. in late 50's. Currently, main activities relate to AMSAT and WARC.

Has been serving as Director and Executive Vice-President of AMSAT, and alternate AMSAT representative to Amateur Satellite Service Council. Responsible for generating orbital data for the AMSAT-OSCAR 7 and 8 orbital calendars published by W6PAJ. Involved in WARC amateur satellite preparations and member of FCC WARC

Advisory Committee on Amateur Radio. Coordinating AMSAT portable satellite terminal project. Developed computer model of Phase III antenna and involved in computer hardware and software for AMSAT OSCAR Spacecraft Laboratory at the NASA Goddard Visitor Center.

Employed by NASA Goddard Space Flight Center as head of effort in Very Long Baseline Interferometry to study Quasars to make ultra-precise geophysical measurements. Serves on numerous professional committees in astronomy and radio astronomy. Also Associate Professor of Astronomy at University of Maryland.

Patrick J.A. Gowen, G3IOR
Norwich, Norfolk, England

Nominated by Lockheed ARC and RSGB, AMSAT Life Member LM-225, licensed since 1952. Chairman, U. Of East Anglia Radio Club. Founder member East Anglian DX Contest Club (G4ANT). Active in Field Day and Raynet (emergency communications), WAZ, DXCC 330 confirmed, worked over 105 countries via OSCAR. Interested in chasing DX on difficult frequencies, propagation, aerial development, and above all, satellite communications techniques.

Has been serving as Director of AMSAT for the past two years and represented AMSAT at the IARU Region 1 Conference in Hungary earlier this year.

Founder and Chairman of AMSAT-UK. Active on A-0-7 and A-0-8, using flea power on 7B. Past editor of UK "OSCAR News," and lecturer on OSCAR and AMSAT (over 100 talks given).

Employed as Chief Technician at U. of East Anglia in biophysical research and teaching. Electrophysiological investigation of plants and animal systems.

Ambition to spread international interest of amateurs in AMSAT, and to spread interests of AMSAT internationally.

Earl F. Skelton, N3ES
Washington, D.C.

Nominated by Naval Research Laboratory ARC, AMSAT Life Member LM-103, first licensed in 1955, now Extra Class. Interests include satellites, EME, coherent CW, DX, and contests. Holds WAC, WAS, DXCC, and six satellite certificates including OSCAR-WAS. Organized and taught amateur radio training classes at NRL and Prince George's College; past President, NRL ARC.

Presently serving as AMSAT Secretary, Awards Manager and Alternate Director. Also responsible for updating and maintaining AMSAT OSCAR users directory (with input from WB2DNN). Wrote and distributed OSCAR AZ/EL calculation routine (Newsletter, March 1976).

Professionally, heads the Phase Transformation Section, Cryogenics and Superconductivity Branch, Naval Research Laboratory. Also Associate Professor in Engineering at George Washington University and Research Associate in Chemical Engineering at the University of Maryland.

Richard Zwirko, K1HTV
Meriden, Connecticut

Nominated by Lockheed ARC, AMSAT Life Member LM-160, licensed since 1958, currently Extra Class. Past President, Northeast VHF Association and Connecticut Wireless Association.

Has been serving as AMSAT Director and Vice-President for Operations. Responsible for scheduling experiments and coordination of telecommand operations for AMSAT-OSCAR 6 and 7, and of OSCAR 8 up until its transfer to ARRL. Also responsible for appointment of AMSAT Area and Country Coordinators. Served as telecommand station operator at Talcott Mountain UHF Society during first year of AMSAT-OSCAR 6. Has also been an AMSAT bulletin station.

Employed as broadcast technician at WTIC AM/FM, Hartford, Connecticut.

THE BALLOT FORM IS ON PAGE 23

VOTE

VOTE

VOTE

VOTE

MINUTES OF THE BOARD OF DIRECTORS MEETING, 09 JUNE 1978

A meeting of the AMSAT Board of Directors was held during the evening of 09 June 1978 in the Conference Room of Building #2 of NASA Goddard Space Flight Center, Greenbelt, MD. The meeting was chaired by Perry Klein, W3PK, and lasted for about 5 hours. The following people were in attendance:

Tom Clark, W3IWI
Dick Daniels, W4PUJ
Martin Davidoff, K2UBC
Bernie Glassmeyer, W9KDR
John Henry, VE2DNM
Jay Holladay, W6EJJ

Jan King, W3GEY
Perry Klein, W3PK
Earl Skelton, N3ES
Randy Smith, VE3SAT
Bill Tynan, W3XO
Will Webster, WB2TNC

Items discussed and action taken were as follows:

1. Banking Resolutions:

It was decided to empower AMSAT with the capability of establishing savings accounts with Jefferson Federal Savings & Loan, Perpetual Federal Savings & Loan, and any other savings institution for the purposes of investing AMSAT funds. Separate action of the Board on each specific savings account will no longer be necessary.

2. Hewlett-Packard Donations:

It was agreed to acknowledge, with a letter of thanks, the recent donations, by Hewlett-Packard, of several pieces of electrical equipment to AMSAT, including a Model 8640B signal generator, a line printer, and other miscellaneous test gear.

3. Postage for Newsletter Mailings:

Prompted by the significant elevation in postal rates, the following resolution was agreed upon with regard to future mailings of AMSAT Newsletters: (1) Life Members will continue to receive the Newsletter on the same basis as currently in effect. (2) Newsletters will be sent to Regular Members as 2nd-class mail, unless an additional remittance is paid to cover the additional postage for 1st-class or air handling. It was decided that the amount of the necessary remittance for 1st-class service to Regular Members would be left as an administrative decision with the understandings that (a) there is no strong objections from the membership in response to the line-item relating to this which will appear with the renewal notice in the September Newsletter, (b) that the new procedure will not begin until 1979, and (c) the required remittance will only reflect the additional cost involved, i.e., an AMSAT profit should not be realized through this action.

4. SYNCOM-IV and AMSAT-Canada:

Extensive discussions were held with regard to provision of an amateur radio transponder package to Hughes Aircraft Corp. by a Canadian satellite group for installation on the forthcoming SYNCOM-IV geostationary satellite scheduled for launching in 1980. Favorable commentary was offered regarding the technical details of the transponder proposal and the formal reorganization of Radio Amateur Satellite Association of Canada (AMSAT-Canada). Considerations were given to existing relations between ARRL and CARF as well as the proposed band-plan for the SYNCOM-IV unit. Recommendations were made in support of a 1296 or 1252 MHz uplink and suitable 70 cm. downlink -- so called Mode M. Following extended discussions of various aspects of the SYNCOM-IV project, the following resolutions were drafted and adopted by the Board:

- (a) To accept the proposal of AMSAT-Canada to affiliate with AMSAT.
- (b) AMSAT-Canada is to be commended for its initial efforts and is empowered and encouraged to proceed with the development of a transponder for the SYNCOM-IV mission with funding assistance to be provided by AMSAT in an amount not to exceed \$12,000 (U.S. dollars). It is understood that such funds will be provided on an as requested basis to AMSAT-Canada and that said funds are to be accounted for in terms of their disbursement, pending favorable disposition by the ASSC. Moreover, it is understood that the hardware developed with such funds shall be considered the property of AMSAT.

The address for AMSAT-Canada is: Box 7306, Vanier, Ontario, K1L 8E4, Canada.

5. ASSC Representation:

It was agreed that AMSAT representation to the ASSC shall remain as: Perry Klein, W3PK, and Dick Daniels, W4PUJ, with Tom Clark, W3IWI, as designated alternate, and Jan King, W3GEY, as technical consultant.

(Continued on Pg. 15)

6. AMSAT-OSCAR Spacecraft Laboratory:

Funding was approved, not to exceed \$1,500, to cover the cost of graphic expenditures for display functions and other interior refurbishments for the AMSAT-OSCAR Spacecraft Laboratory. Approval of the name, "AMSAT-OSCAR Spacecraft Laboratory," was also given.

7. WARC-79:

Extensive discussions were held regarding the official AMSAT response to the 7th and 8th Notices of Inquiry of the F.C.C.

8. AMSAT Employees:

(a) It was agreed that AMSAT establish a policy of sick-leave allocation of four hours per two-week pay period which can be accumulated, but not redeemable upon termination of employment.

(b) It was agreed to acknowledge the superior level of performance of AMSAT's Administrative Assistant.

(Continued from Pg. 7)

way and the user would be on any VHF band the local AMSAT group decided upon. They could use, for example, 144, 220, 435 or 1296 MHz. They could use SSB, CW, FM, AM or whatever, because the gateway earth station would transform the ground signals to the modulation format used in the spacecraft transponder uplink and down-link, which need not be the same as those used by the gateway user stations. A micro-computer at the earth station would also take care of any satellite tracking and antenna pointing requirements.

This type of service would link amateurs living in cities, but would be of little use to amateurs in rural areas or lesser developed countries. Since all the gateway earth stations would be sponsored by AMSAT groups, they can all be built to a standard specification much in the same way as INTELSAT specifies parameters for commercial satellite users. These standard gateway earth stations could be loaned to other countries for durations of emergencies, or taken out to rural areas from time to time. It is also possible that rural stations could tie into a gateway via a terrestrial VHF repeater.

This article has suggested one possible solution to the problems of high power use on OSCAR and the shortage of frequencies from satellite use. The author would welcome your comments and thoughts on the subject.

Silent Key

David Middleton, W7ZC



Dave Middleton, W7ZC

AMSAT lost a friend and a valuable Area Coordinator when Dave Middleton W7ZC suffered a fatal heart attack on 10 June 1978. Dave had been an active radio amateur for 50 years and had published many articles in QST, 73, CQ and World Radio. Dave had joined AMSAT in 1969 and was one of our earliest supporters.

Dave was one of the originators of the solar cell sponsorship idea, having suggested that AMSAT could raise funds by selling shares in the spacecraft.

Dave will be missed by AMSAT and his many friends in all the other aspects of amateur radio that he was active in.

THE AMSAT-80 COMPUTER PROJECT

By Joe Kasser, G3ZCZ

Update

The Amateur Radio Interface Board as described last time is almost ready and should be deliverable in 30 days or so.

The AMSAT-80 machines are going to standardize on Northstar compatible floppy discs as the prime means of media exchange.

Kansas City Cassettes and Paper Tape will follow a close second.

AMS-80 is now available with lots of documentation. We will put it into PROM (2708 or 1702) for you.

If you wrote in and have not yet received a reply, this is it. If you have sent in an sase, the latest prices and information will be sent to you. If not, send an sase to W3IWI.

AMSAT GRATEFULLY ACKNOWLEDGES DONATIONS OF \$100 OR MORE FROM THE FOLLOWING NEW LIFE MEMBERS

LM-911	Joh. Doesema, W. Germany	LM-928	Dave Faucher, W4LUQC
LM-912	Jack R. Sager, VE6BCR	LM-929	H.F. Filson, KØSMI
LM-913	Tom Watson, WAØDJP	LM-930	John S. Forchtner, W6MUL
LM-914	John A. A. Clausen, WBØLYV	LM-931	George S. Adam, WB9PFR
LM-915	R.R. Dunbar, Jr., WØPN	LM-932	Richard Henry, N7OA
LM-916	Charles J. Nobes, K8UTY	LM-933	Mike Duval, W2MD
LM-917	E.L. Williams, KH6BAS	LM-934	Robert A. O'Leary, WB2NHT
LM-918	F.W. Tuck, G8KZP	LM-935	Arturo H. Carou, LULAHAC
LM-919	Curtis Heuberger, K1CH	LM-936	Martin A. Pool, K5AOB
LM-920	Frank Hasper, WA6JEY	LM-937	Thomas Hori, KH6OS
LM-921	Anthony Bodo, WA9Y0Z	LM-938	Dr. Donald V. Mason, WB6FUS
LM-922	Michael P. Terry, WB7CZJ	LM-939	Nick J. Laub, WØCA
LM-923	Unaldo Paiva Cruz, PY7AAE	LM-940	Dr. Peter E. Erni, HB9PFI
LM-924	Frank Gensiak, K3NOE	LM-941	Don Elrich, WBØFXX
LM-925	Richard E. Flarida, K8BJA	LM-942	Ray Klotz, WB5WCL
LM-926	Joe Keagy Bair, K4WS	LM-943	John H. Brown, WØWAV/W7CKZ
LM-927	Frank Layton, N6OI	LM-944	A. Edward Terpening, W4VCY
		LM-945	Albert Segen, VE2DD
		LM-999	Thomas J. Barker, K6MDG
		LM-1000	John E. Montague, WØRUE

435 MHZ FILTER FOR USE WITH AMSAT-OSCAR 8 MODE J

A common problem with operation in AMSAT-OSCAR 8 Mode J is desensitization of one's 435 MHz receiver from the third harmonic of the two-meter uplink transmitter. A low-cost 435 MHz bandpass filter has been developed and proven successful in eliminating this problem.

Construction details of the filter have been written up and are available for an sase (or sae and IRC's) from Bernie Glassmeyer, W9KDR, Satellite Coordinator, ARRL, 225 Main Street, Newington, Conn. 06111.

Letters and Comments

38 T-
7.878

FLYGPST
PAR AVION



Dear Joe:

Got June Newsletter and would like to comment on "Where Do We Go From Here" by W2RS.

My suggestion would be that we start building better and smarter satellites. Note that I did not say bigger and more expensive. Looking back now at all eight OSCAR satellites, what was one of their common short-comings? POWER. And how was it solved in the next S/C? Bigger solar arrays and more batteries to store power, making for bigger and more expensive satellites. But our "birds" are not supposed to be a fat city cost plus percentage construction project. So how about copying something professional satellite builders have been practicing for over 10 years and the 2 meter FM bunch also has put into operation many years ago: NiCad battery re-conditioning to erase the memory effect and restore the batteries to almost new power storage capability. The OSCAR 7 & 8 satellites enter extended night time periods several times a year. OSCAR 6 would still be alive today if battery re-conditioning could have been done! The process is so simple and inexpensive: deep discharge and recharge about 3 or 4 times in succession is all that is needed. The deep discharge can be done very easily by disconnecting the battery involved from the rest of the circuitry and placing a low ohmage resistor across its terminals. Do one battery at a time. Is this too difficult for us to do? Even if flying with one battery only, this can be done by stored command. Just because a satellite is X years old should not constitute reason to help it along to its final resting place in the sky.

While reading the Phase III Progress Report by W3GEY, I was wondering if any consideration is being given to substituting a false sun and earth pulse in case either sensor should fail. Final attitude final tuning could be done by varying the magnetic torque coil assembly. Several NASA spacecraft launched during the past 10 years have suffered sensor failure. Those with proper contingency planning are still in operation today. The others died with their sensor failures. Is this too difficult for us to do?

Much is also being written about the high power abuse on the uplink. Instead of using AGC to control the whole uplink band spectrum or 3 sub-bands (as is recently being proposed), why not install some form of hard limiting or compression circuitry? Overly strong signals will be clipped and can't be copied on the downlink, i.e., no QSO. Or compress the spectrum amplitude so that the little fellow can also get on for a change. The 3 sub-band plan sounds fine, except when each sub-band gets occupied



by a high power station. Writing a letter to an offender or putting his call in print is useless. If stations abuse the satellite regularly, reading about it three or six months later won't change a thing except increase postage expenditures.

Joe, I think you should discontinue reproducing postage stamps, etc. in your Letters and Comments section. Most hams know where I5, HB9, YV5, G3 ON4, et al are located. Some of the stamps are small to start with and virtually impossible to read without a magnifying glass. I rather read more letters to the editor--you! Or am I older past my years and fail to see the beauty?

73,

Fred Siebert, K3PNL
LM 124



Canada 8

Hi Joe,

Regarding the Phase III channelization idea. I tend to go along with such a provision, however I do feel that some of the die-hard QRMs will present problems. As on OSCAR 6, 7 and also on AO-8, the bandplan is not being adhered to by a surprising number of stations. Sideband stations occupy a goodly portion of the CW band or segment. Have a feeling the same thing could happen with Phase III. The overall idea of the bandplan for nets, roundtables, etc. is a great idea.

I've noticed that when AO-8 is on a longitude path of about 125° or more west, usually late evenings in California, very few stations are using AO-8. A couple of nights in a row I've called CQ on CW never with a single reply. It makes me curious. California, Oregon and Washington stations should access AO-8 with very respectable signals. Using 15 watts output and a vertical "J" antenna, I have no problem even when AO-8 is that far west.

Also, are there any KH6s on AO-8? Never even heard one yet.

Thanks and 73's

Vern, K6UGS

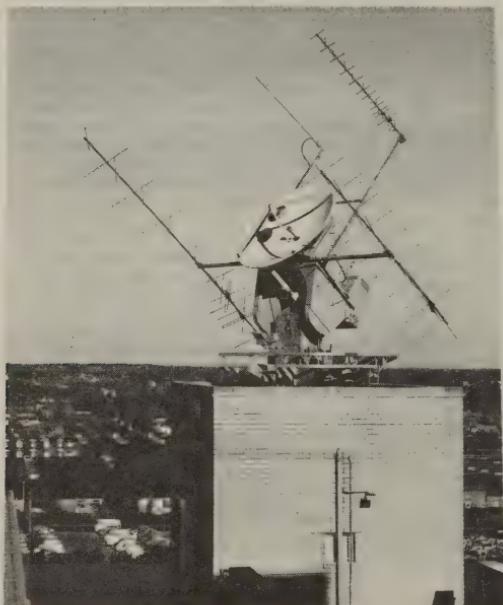


Photo 1- University of Surrey Command Station Antennas

Dear Joe,

Please find enclosed photos of the University of Surrey command station taken during the launch of AO-8. Photo 1 shows the tracking aerials for 137, 145, 435, and 1296 MHz, and the paraboloid used for 10 GHz Amateur colour T.V. - mounted on a 3½ ton modified Bofors gun mount. Maximum slew rate is 60°/sec but kept down to 10°/sec for tracking purposes. The maximum pointing resolution is $\pm 0.05^\circ$ under manual control or $\pm 1^\circ$ under auto-command. The mount is driven by two 30v 30 amp. d.c. motors with a solid-state proportional + integral control loop. The aerials are immediately above the command station.

Photo 2 was taken just after the launch of AO-8 during a series of command and communications experiments carried out at UOS-AMSAT. Two of the three terminals on-line to the University's main ICL 1905 computers can be seen on the left. This facility enabled us to obtain rapid A_z/E_l predictions for AO-8 and to analyse Doppler measurements (taken on the Eddystone 958 + digital readout (± 1 Hz) at the far right), providing updated orbital parameters. Telemetry trend analysis was also carried out on-line. The uplink communications equipment (TS700G) and downlink (Eddy. 958) can be seen underneath the AO-8 command encoder (the panel at the far right). The command power amplifier is above the encoder. The tracking was carried out by an on-line MINIC computer, and the auto-command system (the left panel). The aerial control panels may be seen in the centre, below the C.C.T.V. monitor.

Operators involved during the launch activities were: G3YJO, G4EDW, G4CWH, G4SVV, G8JFX, G8NEH, G8MLO, G8ONO and G8NEF.

Early telemetry from AO-8 on 435.1 MHz was received by G3ILD and relayed to K1HTV and Goddard immediately on 21 MHz by UOS. The 435 MHz beacon was heard at UOS for about 8 seconds following ejection but it was very weak and the telemetry was not decodable. Confirmation of UOS command acceptance by AO-8 came on orbit 002 although the beacon was still weak.

Best 73,

Martin Sweeting, G3YJO
UOS-AMSAT





Photo 2 - Univ. of Surrey
Command Station, with operator
Martin Sweeting, G3YJO

Dear Joe:

My copy of the Newsletter (Volume 10 No. 2) arrived this morning (26 June 1978) thank you.

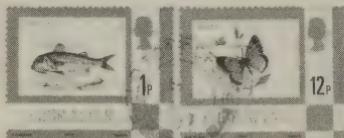
Naturally I would like to receive the next edition as quickly as possible.

Nevertheless, I would agree that \$3000 per year would be better spent on Phase III spacecraft.

James Thompson, GI 3ILV

Dear Joe:

In reference to your question in the most recent Newsletter about the VXO provision in the VHF Engineering TX-432, one can use individual crystals (18 MHz) available through VHF Engineering. For my unit, I acquired the CD-2 crystal deck which is nothing more than 11 crystal sockets and a rotary switch. This crystal deck is designed for use with all their transmitters. One can choose the crystal frequencies needed for whatever portion of the band.



Something else worth mentioning is that the TX-432 can also be used on 432 MHz by merely changing the crystal and retuning all the stages. One loses roughly half a watt, but the one-watt output is still enough to drive their 430-435 MHz amplifier to full output. Here I'm thinking in terms of using the unit to access the next new bird, Phase III.

Hope this sufficiently answers your question about the VXO arrangement on the TX-432.

73's

Vern Hajek, K6UGS

P.S. Found out recently that Hamtronics, 182 Belmont Rd., Rochester, N.Y. 14612 has a fair supply of various VHF & UHF kits at comparable prices worth looking into.



PER VIA AEREA
PAR AVION

Dear OM's:

Since a single letter to just one of you may get hung up in the files--perhaps for months--this one is being sent to all. My last letter, somewhat in the same vein, with a copy to the ARRL HQ Coordinator evoked no response from either AMSAT or ARRL. Perhaps this will score better.

As an early AMSAT Life Member--- and one who convinced the Dade Radio Club to become "Club LM #2"---it is my opinion that the satellite program is in deep trouble, that this is not recognized by the officers because they are "too close" to it, and that it is time to take a hard look at it from the general membership point of view.

The following may seem verbose but it is the only way I can present the background for the questions which bug me---and I suspect are bugging many other members.

After 44 years of active ham radio (including 4 years as ARRL Director) I feel fairly well acquainted with the statistically average ham. He is only "mildly" technical. He is rather good at operational techniques. As the "state of the art" progresses, he is slow to give up familiar ground for anything "new". If the change is not too costly or radical, he may give it a tentative tryout. If it proves satisfying and practical, he is likely to become a zealous promoter of the new "art". If "turned off", he may be just as zealous in the opposite direction.

When O-6 flew, we finally had the type of satellite that satisfied this "average ham". Relatively low cost and not too much technical knowledge was required. Those who tried it out soon became good salesmen for satellite communications---and AMSAT.

With O-7, he was a bit unhappy about the Mode A performance. Some-what more ERP was required but by this time was becoming more familiar with VHF so a move to receiver pre-amps and power amps was only a slight step along the way. The more technically minded started to take advantage of Mode B. Since this required greater technical proficiency and/or considerable investment many of the original users, and practically all of the neophytes, remained on Mode A. As O-6 was dying and O-7 got into trouble, many "dropped out". Multi-mode 2-M transceivers hit the market and there was a brief surge of new-comers which ended with the death of O-6.

Died-in-the wool users kept up the spirits of potential users by saying "wait for O-8" and "O-7 will be back" but O-8 turned out to be a big disappointment--erratic, difficult to

access for more than a few minutes at a time, subject to fast fades and highly critical to the number of signals in the pass band. The lower altitude decreased the range and shortened the length of time available in a pass. Most frustrating was the decision to operate O-8 on both weekend days in Mode J!

Then came another highly unpopular decision. O-7 on a "two days Mode B, one day Mode A". A typical session between a veteran and neophyte might go like this (over the past few months):

"O-7 will be Mode A this evening. With that new antenna you should make it. Be there and I'll be listening for you!....schedule time...O-7 still in Mode B....20 minutes....O-7 fades out.....Sorry, OM, try next pass....schedule time....O-7 still in Mode B...check to see if right day....supposed to be Mode A....Sorry, OM...we'll try O-8 tomorrow....next night....schedule time for O-8....no signal....15 minutes....no signal....what the #\$%&@! is wrong?....call neophyte and try to explain that O-8 not switched back to Mode A....try next pass...neophyte says "--to h-1 with it"....veteran of same opinion.

So now for the questions:

Is there a good reason for O-7 to operate Mode A only one third of the time?

Is there a good reason for O-8 to operate Mode J on both weekend days? Since only a handful are equipped for this mode, why not one week day?

Are 104 "experimental days" really necessary during the year? (52 per satellite)

What experiments are being conducted? By whom? What results? Where and when have these results been published for member information? I find little or nothing about them in the Newsletter.

To what extent are members' wishes considered? On the recent Field Day, there seemed to be a consensus that O-7/O-8 should be in Mode A for a practical test of "field" installations.

When will we see the technical explanations for the erratic O-8 operation?

Are there so few reliable "control stations" that mode schedules cannot be maintained?

When can we expect a "control station" in the deep south? It is very frustrating to "lose" half a pass waiting for a Canadian station to control the switch in mode.

Is AMSAT really interested in increasing the number of satellite users-- or is it more concerned with limiting the users? The present program seems to point at the latter.

Final comment: While in this letter I am voicing only my own opinions, I know for a fact that our local coordinator, Walt Dixon, W4DWN, also feels strongly that the program is failing--and not for lack of his dedicated promotion! Personally I am ready, willing and able to back the program with time, effort and cash--but not in the direction it is now going. When the program goes back to full membership participation instead of full membership financing for a select few to participate then I will take another look at my contributions.

73,

Charles J. Bolvin, K4KQ



R 4016 Basel 16
238

Dear Joe,

Please permit me the space to answer Peter, G8BFF, whose letter appeared in the March Newsletter, apparently criticising his own misinterpretation construed from some of my comments in "Powers That Be" that you published in the December 1977 issue.

I hasten to re-assure Peter that at no point did I suggest that "B" licensees were inferior in technical knowledge, examination ability, professional competence, personality, or indeed any other context that he may have assumed.

The only "superiority" to "do things in Radio" for the full licensee comes directly from the fact that the additional Morse examination necessary for a license to transmit Morse and operate on any amateur band below 144 MHz has been sat and passed, thus freeing the operator from the self-imposed restrictions that result from this accepted limitation.

To realize these difficulties, I present the following obvious facts:

(1) Despite its use of VHF, "OSCAR" is in fact a DX band, with all the problems of overcrowding, competition, mixed mode

operation and with the additional difficulty of ALC attenuation caused by those who have powerful uplinks but poor downlinks, as frequently evidenced by VHF only stations, particularly on Mode "A". Thus, "DX-ability" learned early in the game, particularly by QRP CW stations on the HF bands, i.e., the American Novice stations, can be a great advantage on "OSCAR" when a weak station has to contend with the presence of powerful stations on a small band to effect any worthwhile QSO's.

(2) The use of CW as an amateur communications medium when long haul QSO's are being effected is very valuable on OSCAR for the following reasons:

- (a) Less use of valuable bandwidth.
- (b) Greater readability for a much smaller signal.
- (c) Vastly superior readability by using narrow filters at the Rx.
- (d) Far less affected by blocking, fading, splatter, etc.
- (e) Far less power needed to maintain a solid QSO thus saving the battery.
- (f) The flexibility in international contacts of the "language" used.
- (g) The ability to QSO those, as in many developing countries, who can only afford a simple CW rig, or build one with little technical aid.

(3) That for reasons of general coverage, it is necessary to hold the highly informative and assistive "AMSAT Nets" on the HF bands, thus placing a great handicap on those who are not so equipped, and who may not by the very restrictions of their license contribute to them. Thus, operational schedules, limitations, DX-peditions, and all topical relevant information can be missed by the VHF only operator.

(4) Codestore messages are in Morse Code, which could not be understood and gained from by those unable to pass the simple 12 w.p.m. Morse test needed for the full amateur license.

It is very noticeable on OSCAR that the most effective stations are CW and SSB operators, and that there are many more countries active on CW than on SSB. It is also very evident that in the main it is the VHF "Phone only stations" who cause most of the problems of blocking, off-schedule operation, simply,

one must assume, due to their separation from the main media, and their limitation of HF antennas and experience.

Other than to convince OSCAR enthusiasts of the advantages to be gained by taking that Morse test, e.g. the points made above, there is little we can do about points (1), (2) and (4). As for point (3), here we can help, and AMSAT-UK is starting a large number of nets on two metres within the parochial areas of our band of co-ordinators who are willing to give of their time and experience. The current list is as follows:

North-East England. G3ILD (Darlington) Wednesdays, 2100 UTC, 144.280 USB.
London Area. G3FPK and G8SCI (SE London) Sundays, 1930 UTC, 144.280 USB.
Wales. GW3NJW (Cardiff) Sundays, 1800 UTC, 144.280 SSB.
Greater Manchester. G8KNP (Manchester) after every A-0-7 pass 144.280 USB.
Scotland. GM4DSZ and GM3EDZ (Edinburgh) Sundays, 1800 UTC, 144.280 USB.
Imminent are nets for the Kent area each Sunday at 1930 UTC on 144.280 USB and for South-West England from G8FXX/A at the University of Exeter.

We strongly recommend all co-ordinators, particularly in areas where VHF only licenses are issued, to follow this trend, as it is only by communication and progressive education that the more experienced and aware OSCAR users can help the newcomer and those out of the main line communications and at the same time help ourselves by providing a better used OSCAR so that all may use it for better communications and for experiments on Wednesdays without the continuous blocking so evident in the European area.

Sincerely, 73,

Pat Gowen, G3IOR



Colin J. Hurst, VK5HI
8 Arndell Road
Salisbury Park,
S. Australia 5109

CORRECTION TO AMSAT-OSCAR 8 REFERENCE ORBITS AND W6PAJ ORBIT CALENDAR

The equatorial crossing times for AMSAT-OSCAR 8 published in the June "AMSAT Newsletter" and in the W6PAJ Orbital Prediction book have been accumulating errors of several minutes, and we have worked out the following correction factor that should be applied.

Corrected equatorial crossing time = $T + 0.00205N$ minutes, where T is the published equatorial crossing time and N is the orbit number

For example,

Oct. 6, 1978 Orbit 3000, 1842:30 UTC at 321.6° W
add the correction factor $0.00205 \times 3000 = 6.15$ minutes to give 1848:39 UTC

The reason for the error is confusion between AMSAT-OSCAR 8 and the second stage of the Delta launch vehicle. The two objects are in similar orbits, and were very difficult to tell apart from radar tracking data during the first few months following launch.



Dear Joe,

Having been a member of AMSAT for over five years there are a couple of points that I would like to make about the Newsletter. "Down Under", for the want of a better term, we rely heavily on the Newsletter for information. Therefore, I would fully endorse the proposal to pay for my Newsletter to be airmailed (irrespective of being a Life Member) to ensure that the news is up-to-date. Secondly, I have found the lack of minutes of Board Meetings in the last two issues a little disconcerting. Perhaps they have been deleted for a good reason; however, I always found them informative and have personally missed them. Perhaps an abbreviated form in the future may be considered. However, your efforts are tremendously appreciated for an excellent in-house magazine. In conclusion, I would like to appeal to any member of AMSAT who is currently plotting OSCAR 8 channel one telemetry to establish spin rate and attitude, etc. and would like to compare notes. I would be greatly appreciative of hearing from them. To date, I have observed some interesting points which may or may not prove to be something of substance in times to come. My interest in OSCAR 8 is a carry over from OSCAR 7 RTTY telemetry from which I have been able to analyse and appreciate just how well the magnetic stabilisation works on our "birds".

Colin J. Hurst, VK5HI
8 Arndell Road
Salisbury Park,
S. Australia 5109

AMSAT NEWSLETTER SEPTEMBER 1978

Don't forget to separate BALLOT and RENEWAL APPLICATION before mailing.

BALLOT SHEET

Vote for up to three (3) candidates and mail to AMSAT, Elections Secretary, P.O. Box 27, Washington, D.C. 20044 U.S.A. Ballots must be received by October 14, 1978.

IMPORTANT: Be sure to include your name, member number and ZIP code (or country if located outside the U.S.) on your ballot mailing envelope, so that your ballot can be validated.

- Tom Clark, W3IWI
- Pat Gowen, G3IOR
- Earl Skelton, N3ES
- Richard Zwirko, K1HTV

MEMBERSHIP RENEWAL NOTICE

AMSAT Newsletter Sept. 1978

Please complete form and mail to AMSAT as soon as possible.

Name _____	Call _____	License Class _____	ARRL Member? _____
Street _____	City _____	State _____ (Country) _____	ZIP or Postal Code _____

Membership Number _____ or, check here if you are applying for new membership _____

Please indicate here if you have made one or more contacts on AMSAT-OSCAR 6,7 or 8
Mode A ____; Mode B ____; Mode J _____. Would you be willing to accept an AMSAT assignment in a technical area? ____ an administrative area? ____

Individual membership dues for January-December 1979.....\$10.00
(Approx. half the dues are for subscription to the quarterly "AMSAT Newsletter")

**Include \$3.00 here if airmail delivery of AMSAT Newsletters is desired (in North America, include \$1.50 for First Class mail.)\$ _____

Affiliated Member Society dues for January-December 1979 (\$20).....\$ _____

Life Membership (donation of \$100 or more).....\$ _____
An AMSAT-OSCAR satellite pin is provided to new Life Members

A-0-7/A-0-8 Combined Orbit Calendar for 1979 (@ \$3 each).....\$ _____
(Provided free to Life Members on request)

Life Member Society (donation of \$200 or more).....\$ _____

Contribution toward AMSAT Phase III Satellite (Solar cells may be sponsored at \$10.00 per cell, battery cells at \$200).....\$ _____

Other _____ \$ _____

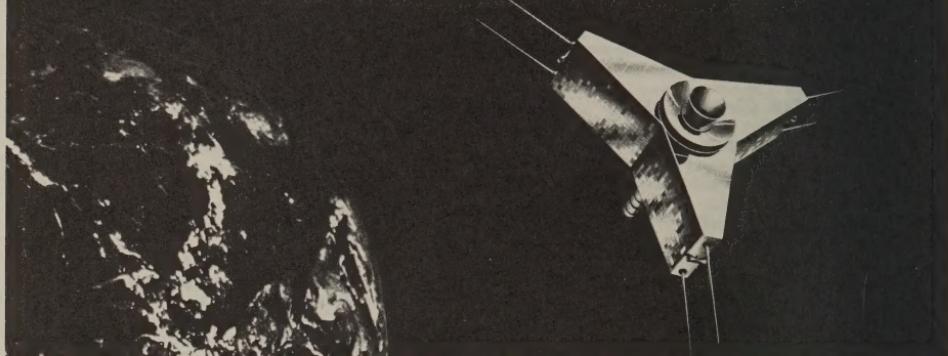
TOTAL AMOUNT ENCLOSED \$ _____

(Please make your check or money order payable to "AMSAT" in U.S. funds*. We also welcome payment by VISA or MasterCharge. Please give your account number and expiration date.)

*NOTE: Members outside the U.S. may send their AMSAT dues to their national organization: AMSAT-DL, AMSAT-France, AMSAT-Italiana, JAMSAT, AMSAT-Mexico, AMSAT-Nederland, AMSAT-UK, or NZART. Swiss dues can be sent to HB9OP. Members in countries with currency restrictions may send IRC's (@ 3 IRC's per \$1.00).

**AMSAT Newsletters will be sent via Second Class and Surface Mail unless additional postage is included. Life members receive their Newsletters by First Class or Air Mail.

YOU... AND AMSAT PHASE III



An exciting new era in amateur radio is about to begin...the era of AMSAT PHASE III OSCAR satellites.

The AMSAT PHASE III satellite program promises a continuing demonstration that amateur radio is at the forefront of modern technology. PHASE III satellites will routinely provide reliable communications over paths of up to 11,000 miles (17,600 km) for 17 hours each day. You can think of them as a resource equivalent to a new band.

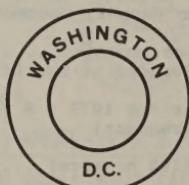
The cost of these PHASE III satellites is a projected \$250,000. Commercial satellites of similar performance would cost nearly \$10,000,000.

Your help is needed to put these PHASE III OSCAR satellites in orbit.

Your valued, tax-deductible contribution can be as small as one of the 5000+ solar cells needed. A handsome certificate will acknowledge the numbered cells you sponsor for \$10 each. Larger components of the satellites may also be sponsored with contribution acknowledgements ranging to a plaque carrying your name aboard the satellites. Call or write us for the opportunities available.

Your membership in AMSAT is important to the satellite program, and will give AMSAT a stronger voice in regulatory matters concerned with satellites. At \$10 per year or \$100 for life, you will be making a most significant contribution to the satellite program and the future of amateur radio. You will also receive the quarterly AMSAT newsletter.

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